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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/634,384 | 08/09/2000 | Harold R. Blomquist | TRW(VSSIM)4784 | 5166 |

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TAROLLI, SUNDHEIM, COVELL & TUMMINO L.L.P.
526 SUPERIOR AVENUE, SUITE 1111
CLEVEVLAND, OH 44114

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| EXAMINER |
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MILLER, EDWARD A

| ART UNIT | PAPER NUMBER |
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3641

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/634,384 | BLOMQUIST ET AL. |
| | Examiner | Art Unit |
| | Edward A. Miller | 3641 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 24 February 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 33 and 35-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 33 and 35-44 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 24, 2003 has been entered.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 42-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 42, lines 6-8, it is not clear how "said ignition material" can comprise 25-50% of "the ignition material...." Possibly something is omitted or there is some other problem; it is not possible for a thing to be 25-50% of itself. Thus, these claims cannot be understood and the metes and bounds are not clear.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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6. Claims 33 and 35-44 rejected under 35 U.S.C. 102(e) as being anticipated by, or under 35 USC 103(a), as unpatentable over Martin et al.

In Martin et al, note col. 12, lines 15-61. There, particulate ammonium perchlorate (AP) oxidizer and nano aluminum particles are combined to form a powder. In lines 51-61, this powder is ignited by a hot bridge wire. Thus, prior to ignition, the arrangement comprised an electrically actuatable igniter comprising a pair of leads or electrodes, and a bridge wire in contact with the loose ignition material particles. Since the bridge wire ignited the particles, the bridge wire must have been contacted with a pair of electrodes (one for positive and one for negative, voltage/current from a powder supply) to supply the electricity which fired the bridge wire and ignited the powder, even though the wires or electrodes are not mentioned.

In col. 5, lines 56-63 and col. 6, lines about 5-20, ALEX (exploded aluminum) is a preferred method of preparing the nano aluminum. Thus, it is believed that the nano aluminum above was exploded aluminum, in which the claims are anticipated, or such would have been clearly obvious. The properties claimed such as temperatures, etc., must be inherent in the composition, as the concrete limitations are all met or at least clearly obvious. To the extent necessary, including as possibly relevant to indefinite claims 42-44, variation of specific size or other well known parameters would have been obvious. It is well settled that optimizing a result effective variable is well within the expected ability of a person of ordinary skill in the subject art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955).

7. Claims 33, 36-42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelly et al., in view of Higa et al., Martin et al., Wheatley and Lundstrom.

Kelly et al. teach thermite compositions in contact with the bridge wire of a an electrically actuated igniter, comprising a pair of electrodes, a bridge wire and an ignition material of thermite.

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Note the Abstract, the Figure, and col. 3, lines 30-66. To the extent necessary, variation of the specific details of the thermite ingredients would have been obvious to one of ordinary skill in the art, in view of Higa et al., Martin et al., Wheatley and Lundstrom. Higa et al. teach "super thermite" in the Abstract, and for use in various applications including pyrotechnics. This includes the specific nano aluminum powder that patentees teach, which is said to be improved over electro-exploited aluminum at col. 1, lines 12-51, especially lines 45-51. Small particle size is beneficial for more rapid and complete reaction, col. 1, lines 25-26, as is well known in the art. Thus, it would have been obvious to substitute super thermite for the small size thermite of Kelly et al. for the expected benefit, improved reaction. Martin et al., Wheatley and Lundstrom teach further regarding the benefits obtained by the use of small sized particles. In any event, variation of particle size which directly effects the reactivity in a known manner, would have been obvious for the expected result.

Note the case law cited in paragraph 6 above.

8. Claims 33 and 35-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baginski, in view of Halcomb et al., Dixon et al., Wheatley and Lundstrom.

Baginski teach the basic invention of electro-explosive primers in broad outline at col. 1, lines 23-36, with a pyrotechnic mix around a bridgewire. The pyrotechnic mix or composition is set forth at col. 8, line 60- col. 9, line 9 with certain advantages thereof. Further, at col. 9, lines 61-67, the compositions may be the usual metal fuel/oxidizer mixes known in the pyrotechnic arts. However, the specifics of the metal particulates are not specifically taught. Halcomb et al. teach a similar device, with the pyrotechnic composition further disclosed at col. 1, lines 62-68 and col. 2, lines 40-47, with metal fuel plus metal oxide oxidizer, as at col. 9, line 65 of Baginski. However, the particle size details are still not taught. Dixon et al. in the Abstract, teach that pyrotechnic ignition mixtures of metal and oxide oxidizer may be around 0.1 microns in size, and that the aluminum, as

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is notoriously well known, is in the form of particulates which are coated with a surface oxide layer, which serves to desensitize the metal powder. Wheatley teaches exploded metal powder which is used with salt oxidizers, and use of this form of metal powder would have been obvious, in the expectation of results in accordance with the properties shown in similar pyrotechnic compositions. See The Abstract and col. 1, lines 45-55 of Wheatley. Lundstrom further shows, with ignition compositions at col. 2, lines 53-57 and at col. 3, lines 7-24, that hot particulates are part of the ignition mechanism, and that ignition may be promoted with the use of small particle size metals or metal oxides. Use of agglomerate particles is notoriously well known in the art. In short, substitution of specific metal fuel particulate compositions for similar metal fuel particulates for the expected results would have been obvious. The electro-exploded metal particulates of Wheatley are the identical product by the identical manufacturer. Note the above cited case law.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In paragraph 8 above, newly cited Martin et al., and Higa et al. are cumulative to the references therein as to the benefits of small particle size., and in Craig, note col. 5, lines 43-55 where many and various ignition compositions are useful in bridge wire igniters.

10. Any inquiry concerning either this or an earlier communication from the Examiner should be directed to Examiner Edward A. Miller at (703) 306-4163. Examiner Miller may normally be reached Monday-Thursday, from 10 AM to 7 PM.

If attempts to reach Examiner Miller by telephone are unsuccessful, his supervisor Mr. Carone can be reached at (703) 306-4198. The Group fax number is (703) 305-7687.

If there is no answer, or for any inquiry of a general nature or relating to the application status, please call the Group receptionist at (703) 308-1113.

Miller/em
June 1, 2003



EDWARD A. MILLER
PRIMARY EXAMINER